

## ABSTRACT

In a metal oxide nanoparticle and a synthetic method thereof, and in particular to maghemite ( $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles usable as a superhigh density magnetic recording substance by having good shape anisotropy and magnetic characteristics, hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles usable as a precursor to the maghemite or a catalyst, maghemite and hematite-mixed nanoparticles and a synthetic method thereof, the method for synthesizing metal oxide nanoparticles includes forming a reverse micelle solution by adding distilled water, a surfactant and a solvent to metallic salt not less than trivalent, precipitating and separating gel type amorphous metal oxide particles by adding proton scavenger to the reverse micelle solution; adjusting a molar ratio of metal oxide to the surfactant by washing the gel type amorphous metal oxide particles with a polar solvent; and crystallizing metal oxide nanoparticles through heating or reflux after dispersing the gel type amorphous metal oxide particles in a non-polar solvent having a high boiling point.